

AN ARIZONA MODEL FOR WEB ACCESS AND PRESERVATION

Note: The draft describes a model that is under development as part of a project of the University of Illinois and OCLC. The project will evaluate the model and the tools necessary to implement it. As such, the model – and this draft – is incomplete; some parts will change as they are tested, while other parts exist only as placeholders for content that has yet to be written. Comments and questions are welcome.

ABSTRACT

This paper suggests a methodology based on archival principles to curate a collection of documents published on the web.¹ In many ways, a website parallels an archival collection. Both contain documents related by provenance, and both organize related documents into aggregates (in archives, series; on websites, directories). This paper also describes tools to help curate such collections using archival principals.

Background

The Arizona State Library is the official depository library for state agency publications and tries to acquire copies of those agency publications with enduring value.^{2,3} In the same way that the federal program has regional depositories, the Library seeks to provide access throughout the state by acquiring copies to place at the three major universities and two major metropolitan libraries. The physical distribution of multiple copies also provides a degree of security against catastrophe and theft.

Although the majority of publications in the collection are print documents, the depository program collects publications in all formats. In 2000, the depository law was amended to explicitly mention electronic publications, such as web documents. Since then, state agencies continue to publish more and more documents on the web. Although preserving electronic documents poses a number of problems, web publishing has the advantage of making it possible for the Library to discover and capture those publications.

¹ Curate is used throughout the document to describe the many functions associated with building, managing, and providing access to a collection.

² Publications are considered to have enduring value if they meet the archival appraisal criteria. "Arizona State Library and Archives identifies, collects, preserves, and provides access to records [including state agency publications] in all formats of Arizona state and local governments and of public officials and other individuals. Archival records remain useful for the Legislature, state agencies, and the general public because those records make government accountable to its citizens; provide evidence about public policies and programs; and protect or verify individuals' rights and entitlements. Archival records provide information about the important people, issues, places, and events that make up the story of Arizona's history." A more complete expression of the archival criteria is available online at http://www.lib.az.us/archives/appraisal_criteria.cfm.

³ For the sake of simplicity, the term agency will be used generally to refer to any entity within state government, including divisions, departments, offices, and programs.

Curating a collection of web documents is not significantly different from building a collection of print documents. Both involve the same steps of identification, selection, acquisition (harvesting), cataloging (description and analysis), reference and access, and preservation. The functions are discussed in a rough sequence, although the functions influence each other and sequence will often overlap in practice. While acquisition precedes cataloging in the paper environment, those steps will likely be reversed in the electronic environment. Describing the materials before they are harvested will allow the harvesting software to assign metadata during the harvesting process. While *what* needs to be done remains the same, *how* those things are done will change.

To date, efforts to build collections of web documents fall, roughly, into two categories. One follows a traditional library model of selecting documents one by one, often by surfing the net in a more or less random fashion; downloading the document, frequently to paper; and then processing it as though it were any other book. This model captures high quality content, but simply cannot keep up with enormous quantities of documents on the web. The other model attempts to capture everything, trading selection for cheap disk storage and description for full-text searches. The capture-everything model transfers the work of selection and access to the patron, and will almost certainly bury future patrons under redundant and trivial information.

This model seeks to use archival principles to find a balance between the item-level and monolithic approaches to preserving documents on the web. It also suggests how and where machines can support the process most effectively. Machines are much more effective than humans at searching through data, building and sorting lists, and tracking activities; having humans search through hundreds of search results for valuable documents is unsystematic, time consuming, and redundant. Machines should be given parameters of where to search and what to search for then build and organize lists of new documents. Machines cannot distinguish in-scope content or what is valuable. The goal is to have technology generate reports so that human can efficiently guide the process and make judgment calls where they are truly needed.

Assumptions

This model is based on a number of assumptions. Some of those assumptions may be specific to Arizona, and others may be specific to government. To the extent the model relies on general principles of archives, the model should be adaptable to a wide variant of environments at all levels of government and outside of government.

1. The principal assumption is that the State Library will not receive any assistance from the content providers.⁴ The Library cannot risk losing critical content because content providers chose – often for very good reasons – not to do additional work for the Library. The model and tools look at web content “as is” and accessible through basic http standards. Any model that requires the presence of metadata or the ability to access the file system or underlying databases will fail if a webmaster refuses to provide that metadata or access. The model looks only at ‘clickable’ content that can be accessed through a straightforward link to a URL. However, the tools should be able to take advantage of any metadata or access privileges that is available.⁵

No one tool can do everything. To the extent that this model focuses on clickable content, it cannot reach the deep web underlying fill-in forms and existing spiders have trouble following links embedded in scripts. Ultimately, a variety of tools are needed to suit the different types of content and the different tasks involved in curating a collection. The model uses the image of tools and a workbench to suggest craftsmanship, because curation is an art, not a mechanical process. The tools are organized on a workbench so that it is easy to pick the right tool, and to integrate the product of those tools.

2. The second principal assumption is that archival collections and websites have many similar characteristics. As such, principles of archival management can be easily and successfully adapted to managing a collection of web documents.

In archival collections and websites, the documents share the same provenance. Provenance is useful as a key to the value of the content (for acquisition) and later as an access tool when searching for documents. For example, one might presume that the records of the governor are more important than the records of the Board of Barber Commissioners. And, a researcher would reasonably expect to look for information about haircuts in at records of the Barber Commissions before searching the records of the governor.

⁴ As a result of the change in the documents law in 2000, the State Library undertook a number of initiatives to strengthen the state documents program, including issuing guidelines for web masters to create metadata to support indexing and preserving their web documents. While some web masters followed voluntary guidelines developed during the 2000 initiative, the majority did not. Many web masters faced budget cutbacks and increased demands on their time. In other instances, staff turnover is very high; even when the Library’s outreach efforts convinced web masters to participate, turnover meant those efforts were lost. A few agencies took steps to obstruct access to their documents.

⁵ The state Government Information Technology Agency has a stylesheet for web masters and teaches courses on how to manage state websites. The Library is developing information on metadata and the benefits of providing clickable content in hopes of getting at least some cooperation.

Archival collections and websites are both organized into series established by their respective creators. An archival series is very similar to the bibliographic notion of a class. Entities organize similar records, including web pages, into series related by function, activity, or subject to facilitate their use and management. The series into which records and web pages are organized provide clues as to the value and content of the items they contain. Rather than appraising a series of blank forms individually, the series is appraised as a whole. Rather than describing every document in the Governor's Drought Task Force individual, the series is described as a whole.

3. Documents, not websites, are the object of preservation. As a result, internal links that navigate a complex document must work, while links pointing to external content may not work. This model presumes that all the pieces that form a document will be preserved as a unit to ensure that it is complete in and of itself, even though that means a lot of redundancy. It may be possible to implement this model in a way that minimizes storing redundant files, but those implementation problems are outside the scope of this model.
4. The ultimate goal of this model is to help patrons locate documents that are relevant to their needs. As such, everything is done with an eye towards access. In particular, description and access are two sides of the same coin.
5. This model does not address long-term problems of keeping bitstreams alive or software obsolescence. Preservation, for the purposes of this model, means capturing documents so that they are within the control of the repository in hopes that, when those long-term problems are solved, there is current content that can be migrated into the future.

SCOPE OF COLLECTIONS POLICY

The first step in building any collection is to establish criteria for what types of materials should be collected. The Arizona model looks at both the content and the creators of the documents to establish criteria and priorities for selection.

Content-Based Collections Policy

Most repositories will have an existing collections policy, although that policy may need some modification to account for any differences in web documents. For this project, expressing the type of content in general terms was fairly easy: state agency publications.⁶ In more specific terms, the Arizona State Library seeks to acquire those documents that contain information about public policies and programs, provide protection or verification of individuals' rights, and offer information about noteworthy people, issues, places, and events that make up the story of Arizona's history. The State Library is generally uninterested in collecting documents of ephemeral value, such as lists of links, contact information, job announcements, and forms.

Macro Appraisal

The content creators are placed in a rough order of importance based on the significance of their function and the risks to the state. Agencies were grouped in the top and second deciles, the "middle," and the bottom quarter. The outcome was not to determine if the House was more important than the Senate, but to determine that they are both more important than the Board of Barber Commissioners.

Macro appraisal helps set priorities. Because the project will take a significant amount of time to implement, the ranking helps determine where to begin. The ranking can also be used during the routine operations of the project. If there is more work than can be completed on a routine basis, macro appraisal helps make sure that the important content is captured first.

Observations Based on the Prototype

A number of issues revolved around content, although those questions frequently came up when considering print based documents.

⁶ As a practical measure to limit the scope of the project, content provided by colleges and universities (.edu) is considered out of scope, although some programs on those sites may be within the scope of collections. For example, the State's Cooperative Extension program is housed in the University of Arizona's College of Agriculture and Life Sciences. In the future, the collection could be expanded to include publications provided by colleges and universities, and by local governments. The collection may also include federal publications with Arizona-related content.

Should websites about public-private partnerships be included, such as freeway construction sites created by the contractor and an agreement with the Department of Transportation? What about sites relating to partnerships between various levels of government? What about a commercial organization's site, if the site related directly to a service contracted by the state, such as the state's deferred compensation plan? In general, the Library considers any publication produced by the state or produced under contract using state funds to be a candidate for acquisition. As staff becomes more familiar with the kinds of materials on the web, that guideline may need to be refined.

More problematic was the general question of whether or not online content should be acquired if there was a paper equivalent. Although the paper copy might be the copy of record and would be easier to preserve over time, electronic versions can be distributed more widely, more quickly, and at less expense. In the end, decisions have to be made on a series-level basis during selection. For example, the online version of the Arizona Revised Statutes is not particularly user friendly and lacks the notes in the published version. Because the paper version is reasonably accessible throughout the state and because historical research into the law usually requires the notes, the decision was made not to acquire the online version.

When this model was first being developed, the intent was to use it for publications. The web has significantly blurred the distinction between publications and records, and the State Archives see potential for using the tools described in this model to capture documents that have been traditionally considered to be records that are being published on the web. Many of those records, such as court documents, have permanent value. In some instances, the records on the web were born digital, and the Archives would prefer the more stable paper versions. However, the agencies holding the records have not always been transferred to the Archives. As such, the Archives sees this approach as a 'backdoor' for acquisition.

Similarly, the model was initially conceptualized for building a permanent collection. The selection process was binary: acquire or ignore. Staff of the Library's Records Management Division suggested that the process of reviewing the series for preservation could also be used to set retention periods. Although documents with limited retention periods would not be added to the permanent collection, the harvester could pass them to a records management application. Changing the selection decision from a binary to a time-based value has the potential of making the tools useful to a wider audience.

The macro appraisal process has not yet been tested.

Tools for Content Development

- No particular tools are needed for developing the content policy.
- The agency taxonomy, described under Harvesting, can be used to record the macro appraisal ranking.

Identification

The first step in acquisition is to identify in very general terms the scope of materials from which particular items will be acquired. Identification is, using the traditional library function of collection development as a metaphor, little more than determining which catalogs a selector will look at when ordering books. Identification does nothing more than define the boundaries of the forest from which trees will be harvested.

Stating the scope in terms of the web is somewhat complicated by the lack of standard practices. In the best of all possible worlds, the scope could be precisely defined as those websites within the domain state.az.us. In practice, agencies have used a variety of domains, such as

www.water.az.gov www.azcfrfrc.az.gov	A top-level domain .gov originally intended for the federal government, but now used generally by all levels of government
www.mindspring.com/~abote www.users.qwest.net/~azat/	Commercial domains containing state and non-state content.
www.arizonaguide.com www.sr51.com	Commercial domain containing exclusively state content.
www.arizonasenate.org www.azredistricting.org	Non-profit domains.
www.acpe.asu.edu www.abor.asu.edu	Higher-education domain.

The Arizona model blends automated and manual approaches to identify and maintain a list of websites with in-scope content.

Automated Identification of Websites

The first approach is based on the assumption that all (or at least the majority) of state websites are referenced on at least one other state website. By analyzing the links on all state pages, it should be possible to discover those websites. Starting with list of seed websites, the pages are downloaded and a list of all links is analyzed to create a list of distinct domains. Those domains are then manually appraised to determine if they host state websites, and selected websites are associated with the appropriate entity's name. This approach is a coarse sieve. It is very effective at identifying state websites at the domain-level, but it cannot distinguish websites located on a commercial server (www.mindspring.com/~abote). Also, this approach does a poor job identifying subordinate websites for subordinate entities (the Arizona Capitol Museum, a part of the State Library, has a website – www.lib.az.us/museum – that is part of its parent's website).

This approach should be repeated regularly. As new state websites are identified, they are added to the seed list of servers searched for distinct domains.

Manual Identification of Websites

Second, documents with lists of agencies, such as organizational charts, budgets, and telephone directories, are searched to identify names of entities not discovered agency names manually using Google to discover if the agency has a website that has not yet been identified. This second approach helps catch exceptions the first approach misses, including websites that are not referenced on any other state site and subordinate websites on commercial domains.

At times, it may seem that the number of entities is almost as large as the number of websites, and finding a complete list of entities – especially programs and smaller offices – is often difficult. Individuals doing the searching must have guidelines to know whether or not an entity is large enough or important enough to search.

This information about the content and content providers (provenance) should be maintained in a database that includes a number of tables.

- A list of all domains, in-scope and out-of-scope. It's important to track out-of-scope domains so that they do not have to be reappraised each month. If a domain disappears, it should still be remembered. If it resurfaces, it may have different content that must be re-evaluated.

- Information about state websites, including a home page. Because some websites are subordinate to others, a spider following a list of all websites would find redundant content; the table should note if the website is logical starting point for a spider. Also, because some websites are aliases for the same content (www.azgita.gov is identical to www.gita.az.us), and would cause a spider to find redundant content; the table should identify if the website URL uses a canonical domain or is an alias.
- Information about the content providers. This information should be organized into a taxonomy that reflects the organizational relationships between entities and records information about the entities, such as administrative histories, mandates, key officials.

Each entity should be linked to relevant content on the web, usually a website. The relationships between the taxonomy and the websites is complicated because the organizational and computer hierarchies are not perfectly congruent. An agency may have a web presence that spans several servers, which may be considered a single site or several sites. An agency will frequently have many subordinate entities, each with its own web presence, which may be a separate website that is effectively independent of the parent website, a separate domain or directory that is integrated into the parent website.

Observations Based on the Prototype

For the prototype, Link Checker Pro to generate the list of domains. The websites for the Corporation Commission, the Legislature, Department of Education, Transportation, Water Resource, and the state portal were used for the initial seed list.

Some 10,000 links included more than 770 distinct domains. Some were obviously out of scope; adobe.com appears as a result of the many links to download the Acrobat reader. However, many of the sites were manually checked to verify if they were in scope or not; the domain www.phoenixvis.net does not suggest that the server is operated by the Department of Environmental Quality. To date some 160 agencies with a presence on the web have been identified (see Appendix 1). Their content is falls within some 170 distinct domains (see Appendix 2).

An initial list of content providers was created by determining the entity responsible for the in-scope websites. The entity was frequently apparent from the common agency acronyms used in the domain or from the title of the home page. The list was then expanded by searching Google and the state portal for websites for entities listed in a directory of state agencies directories. Most entities were agencies, but a few were large divisions, such as Motor Vehicles. Entities with no web presence were added to the database for tracking purposes. Other sources are being reviewed for a more complete list of entities, especially subordinate entities, in order to build a more complete taxonomy. Searching subordinate entities is particularly useful for linking to a subordinate website or home page. We believe that, when completed, the taxonomy may be the most complete organizational chart of state government.

Tools for Harvesting

Ideally, it should be possible to share tools on the workbench with partners to divvy up the work.

- Domain tool. This tool starts with a seed list of in-scope websites, builds a list of all links on those sites, and distills a list of distinct domains. The list of new distinct domains is manually reviewed, and each domain is recorded as being in-scope or out-of-scope. The process is iterative and should be run on a routine basis. Each time the tool is run, new in-scope websites is added to the seed list for future use. In routine mode, the tool should only display domains that are new and domains that have disappeared or reappeared. However, an administrative mode should allow the list of domains to be edited manually (deleting or adding to the list, changing the scope status).
- Agency taxonomy tool. This tool captures information about entities and their hierarchical relationships. It is, in effect, an enriched authority file with the ability to display information in a variety of forms. Agency information includes variant forms of the name (legal, LCNA, vernacular), agency history, legal mandate, scope of content, descriptive metadata, and links to content it has published on the web.
- Harvester must mangle links (relative and absolute) so that they point within the archives rather than to the equivalent page on the live site.

SELECTION

Selection is the process of determining which documents will be preserved. Once the forest has been identified, the next step is to select the particular trees to harvest. The Arizona model presumes that not all state documents merit preservation.

Selection begins with determining the series – the directories – on a website. Assuming that the repository does not have direct access to the file system, the directory structure can be determined by analyzing all the links on a website. In the best of all possible worlds, the directory structure would clearly define the series. In the imperfect world of the web, directories – especially high-level directories – correlate closely with series. However, directories can also define a single document; for example, web masters often group the many html and image files used to create a single document into a single directory. Directories can also be analogous to a folder used to group related materials; for example, a series may be broken into folders for documents from different years.

Finally, a decision must be made as to which series hold documents that meet the collecting criteria. Because of the hierarchical nature of series, the decision to select may be made at a number of different levels. A small collection might be captured without much consideration, because the time spent weeding, organizing, or describing the structure is not justified; if it would take a patron ten minutes to go through all the documents on the website, why spend several hours analyzing its series, selecting the series, and describing the items? However, a large, complex collection may warrant a significant amount of time to weed unimportant series and to build tools to help patrons locate the documents that are saved.

In some instances, it may be possible and desirable to write rules to filter documents to be selected within a series. For example, a series that contains both pdf and html versions of the same document might have a rule to capture only one of the two formats.

The process of appraising collections also includes an evaluation of the effectiveness of the particular tool. Documents in series that can only be accessed through a form may be qualified for selection, but inaccessible by the tools envisioned by this model.

Archival selection is ultimately a hierarchical process. Although most often it stops at the series level, it should be possible to select individual documents within a series.

Observations Based on the Prototype

The Department of Water Resources was used for a quick test of selection, but the model has not yet been fully tested. An analysis of the links on the ADWR's website revealed the site's directory structure (see Appendix 3). ADWR's website includes a site map that described the intellectual organization of the documents, although the documents are physically organized using a different a directory structure.

Ultimately, as is true in the world of paper records, series is a somewhat arbitrary division and mapping the site's structure demanded manual judgment calls. This process is not as onerous as it may seem. Using software to identify and sort the distinct directories on a server, it was relatively easy and quick work to determine the series. In the case of ADWR, it took about an hour to identify seven series and sixteen subseries (see Appendix 4).

Manually identifying the series had a number of advantages because it relied on human insight and judgment that overcame some of the limitations of mechanical analysis.

- First and foremost, directory names are often abbreviations or single words used to represent a more complex concept. Manually identifying series makes it possible to assign names to series that are meaningful to patrons. For example, the director gdtf is meaningless to most people until it is expanded from the acronym Governor's Drought Task Force. Similarly, the directory watershed is shorthand for Rural Watershed Alliance.
- In some instances, the agency used many different servers, often with domain names that gave no clue about the relationship. Manual identification of series related documents scattered on different servers under the same agency.
- Organizing the series in a specific order made more sense than a machine sort. While a computer can sort things alphabetically, another organization – such as one suggested by a site map – may make the most sense.

When appraising the series on the ADWR website, a number of series were rejected. The InfoCentral series was little more than documents of links. The forms directory (and its children) contained blank forms that were out of scope.

The series appraising process also identified several areas of inaccessible content. For example, the spider could not follow links to imaged records. However, if those records are being preserved in paper format, the online versions might not be selected.

Finally, as noted in the discussion of the Arizona Revised Statutes in Scope of Collections Policy, factors relating to the form of materials and accessibility of other content will be considered during selection.

Tools for Selection

- A visualization tool that shows the directory structure of a website based on an analysis of links. The tool might show nested folders, similar to Windows Explorer.
- A database to link series and subseries identified to the associated directories and record appraisal decisions made about the series and documents.

HARVESTING

Harvesting is parallel to the traditional library function of acquisition. Once documents have been selected, they are ordered. Rather than purchasing a document, it is downloaded. A significant change to the function is the addition of the process of transforming the harvested document into something the library can easily manage. This process is not entirely new. In the paper, softbound books and loose journals were bound, and fragile materials were may have been given special housings. The documents still need to be 'processed;' in the past, this might have included stamping a call number on the spine, while in the digital environment the equivalent is the encapsulation of all files required to assemble the document and to assign administrative and preservation metadata.

A number of techniques and tools are available to harvest documents from the web. The technical problems of harvesting documents is outside the scope of this paper.

Tools for Harvesting

- Software that can spider the websites identified as being in-scope and can download documents that according to the business rules established in the selection process. The harvester must be able to determine if a document has been captured before to avoid redundant content. If the content has not changed, the harvester should update the document's metadata to indicate that the document was still on the web at subsequent harvest dates.

- Metadata should be associated with the documents during harvesting. Assigning metadata is described below in Cataloging.

CATALOGING

After materials are acquired by a library or archives, they are cataloged in order to allow the patrons to find the materials. One role of cataloging is to aid the patron in selecting relevant material by presenting key information about the works so that the patron can make a reasonable guess about their relevance without having to consult all the works (description). A second role of description is to organize the descriptions under different headings to make them accessible (analysis).

Description

Archives have never been able to describe all the documents in their holdings. Rather, they describe collections as a whole, followed by the series, and then list the folder headings that contain documents. (The folders can be considered subseries.)

The first step of description will be to add information about each of the in-scope series. The scope note summarizes the characteristics of the described materials, the functions and activities that produced them, and the kinds and types of information contained therein. (It may be desirable to include some information about the out-of-scope series so that patrons will know why they were not included.)

Because these descriptions abstract the common qualities of the documents in the series, they must be written manually. Fortunately, the number of series on a server is relatively small compared to the number of documents, so the amount of work is not unreasonable. To the extent that the series are relatively static, these abstract descriptions will likely remain useful for a significant period of time, even though the documents within the series may change.

The second step is to generate the equivalent of the folder list. In the case of the web, the folder list is more likely a collection of terse representations of all the documents in the series. Given the number of documents on the web, manually describing individual documents is impractical. However, some machine processing of the documents can generate something that – while far short of an AACR description – can help patrons navigate determine if the document might be relevant. In order to give patrons an idea of what a document is, the description should include the following elements.

Creator	Minimally, the name of the responsible agency, which be determined from the agency and series databases. If possible, other entities and individuals responsible for the content should be included.
Title	From the <title> element. During description, it will be important to flag sites or series where everything has the same name. In the absence of a meaningful title, it may be possibly to generate a phrase using significant keywords or phrases analyzed using a natural language processor.
Dates	Minimally, date can be represented by the date harvested. The header also contains a file date, although sometimes that date is generated by the server when the document is requested; this is especially true for dynamic documents. The range of dates a document is known to be publicly accessible should be supplied by the harvester.
Extent	Size and type of the publication. File size (of all components – e.g., html and images, not just html) and simple statement about basic format (html, pdf). Format based on actual format delivered, not file extension (e.g., asp is delivered as html).
Abstract	For extremely important documents, this could be supplied by a cataloger. Autogenerated by natural language processors.

In all cases, any metadata in these categories that is in the web document should also be captured.

Analysis

In addition to description, headings from a controlled vocabulary should be applied to the series. These headings can be used by a search engine to categorize results and as clue to ranking algorithms.

Tools

- To automatically associate creator metadata with documents based on agency database.
- To automatically associate existing metadata within documents (e.g., titles) and to supply a derived title when necessary.
- To automatically generate metadata for an abstract and subject heading using noun-phrase parsers and similar tools.

- To track metadata assigned to series and subseries and associate that series-level metadata with each document.

ACCESS

The broad goals of the project⁷ are to enable members of the public to

Find a document when
the subject is known
the creator is known
the title is known

To show what documents the repository has
relevant to a given subject (infers the ability to produce a browsable list of subjects)
by a creator (infers the ability to produce a browsable list of creators)

To aid in the selection of materials
as to date (date posted, topical date)
as to intellectual character (subjects, language)
as to format

Google is the model for access to online documents. Patrons are willing to accept a fair amount of noise if a document that contains the information they are looking for comes up in the first screen or two or results. As a result, Cutter's precise descriptions of individual items is no longer the norm. Nor is it possible to provide such detailed descriptions to make that type of access possible. The question becomes, How can automated indexing be tweaked so that the useful documents come up quickly and easily?

One part of usability is the effectiveness of the tool, and here's where Google shines. It does a good job putting useful pages on the first screen. Any search engine must be at least as good as Google. Using an open source search engine, such as Swish-E, allows the curator to understand the ranking algorithm and, possibly, to tweak it.

⁷ These goals are an adaptation of Charles Ami Cutter's objectives for a printed dictionary catalog. Although more than a hundred years old, these high level objectives remain effective descriptions of how most patrons tend to look for things. The one principal change is that subject is ranked first and creator (for Cutter, author) is ranked first.

Even though the public is familiar with full-text search engines like Google, they are often frustrated and stymied by results that bury useful documents under thousands of false hits. How can human and machine descriptions be blended to create an efficient, effective search engine that presents information about search results (description) in a meaningful order (index ranking)?

Google brings back thousands of documents, but it shows them to you one at a time and often a real mix of apples and orangutans. For example, Google was nearly useless when searching for information about of B-reels, film or video shot from a second camera and woven into footage from the principle camera (A-reels) for cut-away shots. Unfortunately, B-reel implies movies with 'blue' content. Grouping results into categories would have helped find the needle in the haystack. For example, "B-reel appears in the following categories: adult entertainment (10,000+), film editing (100+), video (13)."

Categorization has proven value in making searches more efficient. Based on an analysis of GILS searches at Washington State and here in Arizona, people greatly prefer searching by browsing categories. Browsing categories is particularly valuable because it helps ensure that searches are constructed using the terms used in the documents. Browsing also prevents patrons from having to think of the right concept; rather, they are offered choices to help them find just what they're looking for.

If metadata is assigned to the series, that metadata can be used to categorize the documents in the series. As with the selection example above, assigning metadata to a few series and subseries is more practical than assigning metadata to hundreds of documents. Further, the series are likely to remain fairly consistent over time, even though the documents they contain may change.

Another example to help demonstrate how categorization might be used for state documents. The Department of Water Resources has distinct series for two different units, the Governor's Drought Task Force and the Rural Watershed Alliance.

name="Creator"	Governor's Drought Task Force	Rural Watershed Alliance
name="Subject"	drought	water conservation
name="Subject"	potable water	agriculture
name="Type"	planning documents	reports

A search for water might display categories associated with water:

- Arizona Department of Environmental Quality (2650)
- Environment (250)
- Forms (124)
- Governor's Drought Task Force (87)
- Potable water (46)
- Rural Watershed Alliance (120)
- Water conservation (56)
- Water Quality (450)

The list of categories would be followed by a list of individual documents ranking by the search engine.

In the pilot GILS project, the categories were created in advance. This approach builds the subject heading list from the ground up. We would like to experiment with the use of computational linguistics to do conceptual analysis to determine these categories automatically. Description shifts from assigning subject headings to documents to managing the subject headings and their relationships.

Description for Curators

Archivists traditionally describe collections in a finding aid. The finding aid usually contains some background information about the provenance, and then describes the structure of the collection (the series and subseries) in outline form. The finding aid served as a surrogate of a collection, allowing patrons in a reading room to 'browse' the folders in a collection without having to actually request all the boxes. Although its value in the age of full-text searches was questionable.

However, finding aids provide a high-level overview of the individual collections that is extremely useful for the curator responsible for managing the collections. The results of search engines very much emphasize the trees rather than the forest. Custodians need a view of the forest to help manage the materials.

Observations Based on the Prototype

A finding aid has not yet been developed, although a series outline and contents list for the Arizona Department of Water Resource's website is included in Appendix 4. This information is the heart of the finding aid, but needs to be supplemented with administrative and agency-level information.

Tools for Access

- A tool to display the structure of a website in a consistent, outline format such as finding aid. The finding aid should include administrative information about the files, especially for the files that have been preserved in the archives. This tool may be closely related to the site analysis tool used in selection. Ideally, the finding aid should have basic structural formatting that complies with the Encoded Archival Description (EAD) standard.
- A search engine with a good ranking algorithm and the ability to categorize results using metadata, and maybe even an autotclassification tool
- Thesaurus software to manage and organize the controlled vocabulary in metadata assigned to or derived from the documents.

REFERENCE

[This section will describe library and archives staff would help patrons find relevant materials. I foresee a greater emphasis on 'pathfinders,' topical documents that include an overview of the subject (basic concepts, conceptual organization of subtopics) with pointers to particularly useful documents that are identified as introductory or advanced.]

PRESERVATION

[This section describes what needs to be done in the short term to maximize the life of documents in the archives. It will include information on specific problems that need to be monitored so that appropriate action can be taken as necessary: media refresh and migration, format migration, data verification to check for bit loss and corruption during refresh or migration. The project anticipates the use of hash values to check for corruption and to serve as a simple means of authentication. This section will also discuss backup and disaster recovery copies, including off-site storage.]

AUDIT AND MANAGEMENT

[It is important to describe routine oversight activities that will ensure the system is performing correctly (are spiders capturing all the documents?, is autogenerated metadata reasonable?) and that the configuration remains current (are there new, unappraised series?, has a site's structure changed or disappeared?). It may be useful to create a separate section, as suggested here, or to incorporate audit and management as a section in each section.]

Tools for Administration

- Mechanism to compare spider results with site so that we don't have to click the spidered and live sites simultaneously to see what was missed. Random selection of spidered pages to check.

APPENDIX 1 : ARIZONA AGENCY AND PROGRAM WEBSITES

23 July 2004

The following list links agencies and some of their subordinate programs to their web presence. In some instances, especially for large agencies, that presence may span several servers. In other situations, especially for programs, the presence may be a subdirectory within the agency's presence.

ACCOUNTANCY BOARD

Arizona State Board of Accountancy
[<http://www.accountancy.state.az.us/>]

ADMINISTRATION, DEPT. OF

Home Page
[<http://capitolrideshare.com/>]
Welcome to the Arizona State Procurement Office
[<http://www.azspo.az.gov/>]
Employee Directory
[<http://ebook.state.az.us/>]
HR Home Page
[<http://www.hr.state.az.us/>]
Spirit Automated Procurement System [<https://www.spirit.az.gov/>]
State of Arizona Telephone Directory
[<http://azdirect.state.az.us/>]
Capitol Rideshare
[<http://www.capitolrideshare.com/>]
HRIS - Human Resources Information Solution
[<http://www.adoa.state.az.us/hris/>]
Welcome to the Arizona State Procurement Office
[<http://sporas.ad.state.az.us/>]

ADMINISTRATIVE HEARINGS, OFFICE OF
Office of Administrative Hearings
[<http://www.azoah.com/>]

AGRICULTURE, DEPARTMENT OF
Arizona Department of Agriculture
[<http://www.agriculture.state.az.us/>]

AMERICANS WITH DISABILITIES, OFFICE OF
Office of Americans with Disabilities
[<http://www.know-the-ada.com/>]

APPRAISAL, BOARD OF

Arizona Board of Appraisal - Welcome !
[<http://www.appraisal.state.az.us/>]

ARIZONA GOVERNMENT UNIVERSITY
Arizona Government University
[<http://www.azgu.gov/>]
Arizona Government University -- Stars [<http://www.stars.azgu.gov/>]

ARIZONA HIGHWAYS MAGAZINE
Arizona Vacations, Arizona Map and Arizona Souvenirs - Arizona Highways Magazine
[<http://www.arizonahighways.com/>]

ARIZONA STATE UNIVERSITY
Arizona State University
[www.asu.edu/]

ARIZONA-MEXICO COMMISSION,
GOVERNOR'S OFFICE
Arizona Mexico Trade
[<http://azmextrade.com/>]

ARTS, COMMISSION ON THE
Commission on the Arts
[<http://www.arizonaarts.org/>]

ATHLETIC TRAINING, BOARD OF
Athletic Training, Board of
[<http://www.users.qwest.net/~azat/>]

ATTORNEY GENERAL, OFFICE OF
Arizona Attorney General
[<http://www.attorneygeneral.state.az.us/>]

AUDITOR GENERAL
Arizona Office of the Auditor General
Home Page
[<http://www.auditorgen.state.az.us/>]

AUTO THEFT AUTHORITY, ARIZONA
Arizona Automobile Theft Authority -
Home [<http://www.aata.state.az.us/>]

BALLADEER
Arizona's Official State Balladeer:
Dolan Ellis
[<http://www.dolanellis.com/>]

BANKING DEPARTMENT
Arizona State Banking Department
[<http://www.azbanking.com/>]

BEHAVIORAL HEALTH EXAMINERS BOARD
Arizona Board of Behavioral Health
Examiners
[<http://www.bbhe.state.az.us/>]

BUILDING AND FIRE SAFETY
Welcome to the State of Arizona -
Department of Building and Fire
Safety [<http://www.dbfs.state.az.us/>]

CHARTER SCHOOLS, ARIZONA STATE BOARD
FOR
Arizona State Board for Charter
Schools
[<http://www.asbcs.state.az.us/>]

CHILDREN, YOUTH AND FAMILIES,
GOVERNOR'S OFFICE FOR
Governor's Office for Children, Youth
and Families
[<http://www.governor.state.az.us/cyf/>]

Chiropractic Examiners

Arizona Board of Chiropractic
Examiners
[<http://www.azchiroboard.com/>]

CITIZENS CLEAN ELECTION COMMISSION
CCEC Home
[<http://www.ccec.state.az.us/>]

CITIZENS' FINANCE REVIEW COMMISSION
Citizen Finance Review Commission
[<http://www.azcfrf.az.gov/>]

COMMERCE, DEPARTMENT OF
Arizona Department of Commerce
Home Page
[<http://www.commerce.state.az.us/>]

COMPENSATION FUND, STATE
SCF of Arizona
[<http://www.scfaz.com/>]

CONTRACTORS, REGISTRAR OF
Arizona Registrar of Contractors
HomePage
[<http://www.rc.state.az.us/>]

COOPERATIVE EXTENSION
Cooperative Extension
[<http://ag.arizona.edu/extension/>]

CORPORATION COMMISSION
Arizona Corporation Commission -
Securities Division
[<http://www.ccsd.cc.state.az.us/>]
Welcome to the Arizona Corporation
Commission
[<http://www.cc.state.az.us/>]

CORRECTIONS, DEPARTMENT OF
ARIZONA CORRECTIONAL
INDUSTRIES [<http://aci.az.gov/>]
ADC -- Media Public Relations
[<http://www.adc.state.az.us/>]

COSMETOLOGY BOARD
Arizona Board of Cosmetology
(ABOC)
[<http://www.cosmetology.state.az.us/>]

COURT OF APPEALS, DIV I.
Court of Appeals, Division I
[<http://www.cofad1.state.az.us/>]

COURT OF APPEALS, DIV II.
Court of Appeals, Division II
[<http://www.apltwo.ct.state.az.us/>]

CRIME VICTIM SERVICES
Crime Victim Services
[<http://crime.azvictims.com/azvoca/>]

CRIMINAL JUSTICE COMMISSION
Criminal Justice Commission
[<http://www.acjc.state.az.us/>]

DEAF AND THE HARD OF HEARING,
COMMISSION FOR THE
Arizona Commission for the Deaf and
the Hard of Hearing
[<http://www.achi.state.az.us/>]

DEFERRED COMPENSATION
Welcome to the Arizona Home Page
[<http://www.arizonadc.com/>]

DENTAL EXAMINERS BOARD
Arizona State Board of Dental
Examiners
[<http://www.azdentalboard.org/>]

DISEASE CONTROL RESEARCH COMMISSION
Disease Control Research
Commission [<http://www.adcrc.com/>]

ECONOMIC SECURITY, DEPARTMENT OF
Arizona Workforce Connection
[<http://www.arizonaworkforceconnection.com/>]
[Arizona Department of Economic
Security] [<http://www.de.state.az.us/>]
KidsCare - Arizona's State Children's
Health Insurance Program
[<http://www.kidscare.state.az.us/>]

Arizona Workforce Informer
[<http://www.workforce.az.gov/>]

EDUCATION, DEPARTMENT OF
Arizona Department of Education
Home Page
[<http://www.ade.state.az.us/>]
Arizona Educational Employment
Board
[<http://www.arizonaeducationjobs.com/>]

EMERGENCY AND MILITARY AFFAIRS, DEPT.
OF
Arizona State Emergency Response
Commission [<http://www.azserc.org/>]

EMERGENCY MANAGEMENT, ARIZONA
DIVISION OF
Arizona Division of Emergency
Management
[<http://www.dem.state.az.us/>]

EMERGENCY RESPONSE COMMISSION
Arizona Emergency Response
Commission
[<http://www.dem.state.az.us/azserc/>]

ENVIRONMENTAL QUALITY, DEPT. OF
ADEQ: Arizona Department of
Environmental Quality
[<http://www.adeq.state.az.us/>]
Phoenix Region Visibility Web
Cameras [<http://www.phoenixvis.net/>]

EQUAL OPPORTUNITY, GOVERNOR'S OFFICE
OF
Governor's Office for Equal
Opportunity
[<http://www.governor.state.az.us/eop/>]

EQUALIZATION, BOARD OF
Equalization, Board of
[<http://www.sboe.state.az.us/>]

EXPOSITION AND STATE FAIR (COLISEUM)
2003 Arizona State Fair - Official Site
[<http://www.azstatefair.com/>]

FILM COMMISSION
Film Commission
[<http://www.commerce.state.az.us/Film/>]

FREEWAY MANAGEMENT SYSTEM (511)
ADOT Freeway Management System
[<http://www.az511.com/>]

FUNERAL DIRECTORS AND EMBALMERS
BOARD
Arizona Board of Funeral Directors
and Embalmers
[<http://www.funeralbd.state.az.us/>]

GAME AND FISH DEPARTMENT
Arizona Game and Fish Department:
azgfd.com [<http://www.gf.state.az.us/>]

GAMING DEPARTMENT
Arizona Department of Gaming
[<http://www.gm.state.az.us/>]
Arizona Office of Problem Gambling
[<http://www.problemgambling.az.gov/>]

GEOGRAPHIC AND HISTORIC NAMES BOARD
Geographic and Historic Names
Board
[<http://www.lib.az.us/about/bghn.cfm>]

GEOLOGICAL SURVEY, ARIZONA
AZGS Home
[<http://www.azgs.state.az.us/>]

GOVERNMENT INFORMATION TECHNOLOGY
AGENCY
GITA Home Page-Arizona's
Government Information Technology
Agency [<http://www.gita.state.az.us/>]
Please Wait... Redirecting to the
Home Page [<https://secure.az.gov/>]

Arizona @ Your Service
[<http://www.az.gov/>]

GOVERNOR'S OFFICE
Arizona Governor Janet Napolitano
[<http://www.governor.state.az.us/>]
Arizona 2-1-1
[<http://www.211.az.gov/>]

GOVERNOR'S OFFICE OF HIGHWAY SAFETY
Governor's Office of Highway Safety
[<http://www.azgohs.state.az.us/>]

HEALTH CARE COST CONTAINMENT SYSTEM
-- ACCHHS
Arizona Health Care Cost
Containment System (AHCCCS)
[<http://www.ahcccs.state.az.us/>]

HEALTH SERVICES, DEPARTMENT OF
Arizona Department of Health
Services [<http://www.hs.state.az.us/>]
Tobacco Education and Prevention
Program - Home
[<http://www.tepp.org/>]

HISTORIAN
Home
[<http://www.marshalltrimble.com/>]

HISTORICAL SOCIETY, ARIZONA
Historical Society, Arizona
[ahs.dreamteamtech.com/]
Welcome To The Arizona Historical
Society! [<http://www.ahs.state.az.us/>]
Welcome to Arizona Historical
Society
[www.arizonahistoricalociety.org/]

HOMELAND SECURITY, ARIZONA OFFICE OF
Arizona Office of Homeland Security
[<http://www.homelandsecurity.az.gov/>]

HOMEOPATHIC MEDICAL EXAMINERS, BOARD
OF
Homeopathic Medical Examiners,
Board of
[<http://home.mindspring.com/~bhme/>]

HOUSE OF REPRESENTATIVES
Arizona House of Representatives
[<http://www.azhousetv.org/>]

HOUSING, ARIZONA DEPARTMENT OF
Housing, Arizona Department of
[<http://www.housingaz.com/>]

HUMANITIES COUNCIL
Arizona Humanities Council
[<http://www.azhumanities.org/>]
AZ History Traveler
[<http://www.azhistorytraveler.org/>]

INDEPENDENT REDISTRICTING COMMISSION
Arizona Independent Redistricting
Commission
[<http://azredistricting.org/>]

INDIAN AFFAIRS, COMMISSION OF
Arizona Commission of Indian Affairs
[<http://www.indianaffairs.state.az.us/>]

INDUSTRIAL COMMISSION
Welcome to the Industrial
Commission of Arizona
[<http://www.ica.state.az.us/>]

INNOVATION AND TECHNOLOGY,
GOVERNOR'S COUNCIL ON
Governor's Council on Innovation and
Technology [<http://www.gcit.az.gov/>]

INSURANCE DEPARTMENT
Arizona Department of Insurance
Home Page
[<http://www.id.state.az.us/>]

JOINT LEGISLATIVE BUDGET COMMITTEE

Joint Legislative Budget Committee
[<http://www.azleg.state.az.us/jlbc.htm>]

JUVENILE CORRECTIONS
Juvenile Corrections
[<http://www.juvenile.state.az.us/public/default.htm>]

LAND DEPARTMENT
Arizona State Land Department
[<http://www.land.state.az.us/>]

LEGISLATURE, ARIZONA STATE
Alis Tracking System
[<http://alistrack.azleg.state.az.us/>]
ALIS Online
[<http://www.azleg.state.az.us/>]

LIBRARY, ARCHIVES AND PUBLIC RECORDS
Arizona State Government
Documents Search Interface (Find It!
Arizona) [www.findit.lib.az.us/]
Arizona State Library Catalog
[aslaprcat.lib.az.us/]
Capitol Centennial Home
[<http://azcapitol.lib.az.us/>]
Arizona Cultural Inventory Project
[<http://cip.lib.az.us/>]
Arizona State Library and Archives
Photos Collection
[<http://photos.lib.az.us/>]
Arizona State Library, Archives and
Public Records [<http://www.lib.az.us/>]
Arizona State Library, Archives and
Public Records [www.dlapr.lib.az.us/]

LIQUOR LICENSES AND CONTROL
ADLLC: Arizona Department of
Liquor Licenses & Control
[<http://www.azll.com/>]

LOTTERY COMMISSION
Welcome to the Arizona Lottery's
official home on the World WideWeb!
[<http://www.arizonalottery.com/>]

MASSAGE THERAPY, BOARD OF
Massage Therapy, Board of
[<http://www.message.state.az.us/>]

MEDICAL EXAMINERS BOARD
Arizona Medical Board - Protecting
the Public's Health
[<http://www.bomex.org/>]

MEDICAL STUDENT LOANS
Medical Student Loans
[<http://www.medicine.arizona.edu/financial-aid/amslp.html>]

MINE INSPECTORS OFFICE
ASMI On-Line
[<http://www.asmi.state.az.us/>]

MINES AND MINERAL RESOURCES
Arizona Department of Mines &
Mineral Resources Homepage
[<http://www.admmr.state.az.us/>]

MOTOR VEHICLE DIVISION
Motor Vehicle Division
[<http://www.dot.state.az.us/MVD/>]

MUSEUM
Home - Arizona State Museum
[<http://www.statemuseum.arizona.edu/>]

NATUROPATHIC EXAMINERS BOARD
Naturopathic Examiners Board
[<http://www.npbomex.az.gov/>]

NAVIGABLE STREAM ADJUDICATION
COMMISSION
Navigable Stream Adjudication
Commission
[<http://www.azstreambeds.com/>]

NURSING CARE INSTITUTION
ADMINISTRATORS AND ASSISTED LIVING
FACILITY MANAGERS, BOARD OF
EXAMINERS
Nursing Care Institution
Administrators and Assisted Living
Facility Managers, Board of
Examiners
[<http://www.nciabd.state.az.us/>]

OCCUPATIONAL THERAPY EXAMINERS
BOARD
Occupational Therapy Examiners
Board
[<http://www.mindspring.com/~abote/>]

OIL AND GAS COMMISSION
Oil and Gas Commission
[<http://www.azgs.state.az.us/OGCC.htm>]

OMBUDSMAN-CITIZENS' AIDE, OFFICE OF
Ombudsman-Citizens' Aide, Office of
[<http://www.azleg.state.az.us/ombuds/ombuds.htm>]

OPTOMETRY BOARD
Arizona State Board of Optometry
Home Page
[<http://www.asbo.state.az.us/>]

OSTEOPATHIC EXAMINERS BOARD
Arizona Board of Osteopathic
Examiners
[<http://www.azosteoboard.org/>]

PARKS BOARD
Arizona State Parks
[<http://www.pr.state.az.us/>]

PEACE OFFICER STANDARDS TRAINING
BOARD
Peace Officer Standards Training
Board [<http://www.azpost.state.az.us/>]

PERSONNEL BOARD
Personnel Board
[<http://www.personnel.state.az.us/>]

PHARMACY BOARD
Arizona State Board of Pharmacy
Index
[<http://www.pharmacy.state.az.us/>]

PHYSICAL THERAPY BOARD
Physical Therapy Board
[<http://www.ptboard.state.az.us/>]

Pioneer's Home
Pioneer's Home
[<http://www.pioneers.state.az.us/>]

PODIATRY EXAMINERS BOARD
Podiatry Examiners Board
[<http://www.podiatry.state.az.us/>]

POSTSECONDARY EDUCATION, COMMISSION
FOR
Arizona Commission for
Postsecondary Education Building
MeaningfulPartnerships in Education
Mission Statement
[<http://www.azhighered.org/>]
Arizona Commission for
Postsecondary Education Building
MeaningfulPartnerships in Education
Mission Statement
[<http://www.acpe.asu.edu/>]
The Arizona Family College Savings
Program
[<http://collegesavings.azhighered.org/>]
]
STAY In School Initiative
[<http://stayinschool.azhighered.org/>]
ACPE Online Programs
[<http://acpe.epsilonium.com/>]

POWER AUTHORITY

Power Authority
[<http://www.powerauthority.org/>]

Prescott Historical Society
Sharlot Hall Museum
[<http://www.sharlot.org/>]

PRIVATE POSTSECONDARY EDUCATION,
BOARD FOR
The Arizona Board for Private
Postsecondary Education - Home
Page [<http://azppse.state.az.us/>]

PROSECUTING ATTORNEYS' ADVISORY
COUNCIL
Prosecuting Attorneys' Advisory
Council
[<http://www.apaac.state.az.us/>]

PSYCHOLOGIST EXAMINERS BOARD
Welcome to the Arizona Board of
Psychologist Examiners Home Page
[<http://www.psychboard.az.gov/>]

PUBLIC SAFETY PERSONNEL RETIREMENT
SYSTEM
Public Safety Personnel Retirement
System
[[http://www.psprs.com/PSPRS/Frame
_PS.htm](http://www.psprs.com/PSPRS/Frame_PS.htm)]

PUBLIC SAFETY, DEPARTMENT OF
[AZVICTIMS Home Page-State of Arizona](http://www.azvictims.org/) [<http://www.azvictims.org/>]
[Az DPS: Crime Victim Services](http://crime.azvictims.org/AZVOCA/)
[<http://crime.azvictims.org/AZVOCA/>]
[Department of Public Safety Home Page-State of Arizona](http://www.dps.state.az.us/)
[<http://www.dps.state.az.us/>]
[AZVICTIMS Home Page-State of Arizona](http://www.azvictims.com/) [www.azvictims.com/]
[Welcome to the Arizona Sex Offender Website](http://www.azsexoffender.com/)
[<http://www.azsexoffender.com/>]

RACING COMMISSION
[Home Page Index](http://www.racom.state.az.us/)
[<http://www.racom.state.az.us/>]

RADIATION REGULATORY AGENCY
[Radiation Regulatory Agency](http://www.arra.state.az.us/)
[<http://www.arra.state.az.us/>]

REAL ESTATE DEPARTMENT
[Arizona Department of Real Estate](http://www.re.state.az.us/)
[<http://www.re.state.az.us/>]

REGENTS, BOARD OF
[Welcome to Arizona Board of Regents](http://www.abor.asu.edu/) [<http://www.abor.asu.edu/>]

REGULATORY REVIEW COUNCIL,
GOVERNOR'S
[Regulatory Review Council, Governor's](http://www.grrc.state.az.us/)
[<http://www.grrc.state.az.us/>]

RESIDENTIAL UTILITY CONSUMER OFFICE
[Residential Utility Consumer Office](http://www.azruco.com/)
[<http://www.azruco.com/>]

RESPIRATORY CARE EXAMINERS BOARD
[Arizona Board of Respiratory Care Examiners](http://www.rb.state.az.us/) [<http://www.rb.state.az.us/>]

RETIREMENT SYSTEM, ARIZONA STATE
[Arizona State Retirement System](http://www.asrs.state.az.us/)
[<http://www.asrs.state.az.us/>]

REVENUE, DEPARTMENT OF
[Arizona Department of Revenue Home Page](http://www.revenue.state.az.us/)
[<http://www.revenue.state.az.us/>]
[Missing Money Free Search for Unclaimed Property - Officially endorsed By The States](http://www.missingmoney.com/)
[<http://www.missingmoney.com/>]
[Arizona Tax Amnesty](http://www.taxamnesty.az.gov/)
[<http://www.taxamnesty.az.gov/>]
[AZ Taxes](https://www.aztaxes.gov/) [<https://www.aztaxes.gov/>]

RISK MANAGEMENT
[Risk Management](http://www.azrisk.state.az.us/)
[<http://www.azrisk.state.az.us/>]

SCHOOL FACILITIES BOARD
[School Facilities Board](http://www.sfb.state.az.us/sfbmain/core_home.asp)
[http://www.sfb.state.az.us/sfbmain/core_home.asp]

SCHOOL FOR THE DEAF AND BLIND
[Arizona Schools for the Deaf and the Blind Agency Home Page](http://www.asdb.state.az.us/)
[<http://www.asdb.state.az.us/>]

Secretary of State
[Arizona Secretary of State Home Page](http://www.sos.state.az.us/) [<http://www.sos.state.az.us/>]
[Arizona Secretary of State - HAVA State Plan Committee](http://hava.sos.state.az.us/)
[<http://hava.sos.state.az.us/>]

SENATE
[Welcome to the Arizona Senate Webpage!](http://www.arizonasenate.org/)
[<http://www.arizonasenate.org/>]

STRATEGIC PLANNING AND BUDGETING,
GOVERNOR'S OFFICE OF
[OSPB Home](http://www.ospb.state.az.us/)
[<http://www.ospb.state.az.us/>]

STRUCTURAL PEST CONTROL BOARD
Arizona Structural Pest Control
Commission
[http://www.sb.state.az.us/]

SUPREME COURT
Arizona's Judicial Branch
[http://www.supreme.state.az.us/]

TECHNICAL REGISTRATION BOARD
Arizona Board of Technical
Registration
[http://www.btr.state.az.us/]

TOURISM OFFICE
Official Website of the Arizona Office
of Tourism
[http://pressroom.arizonaguide.com/]
ArizonaGuide.com
[http://www.arizonaguide.com/]
Arizona Scenic Roads
[http://www.arizonascenicroads.com/]
Arizona Office of Tourism - Vacation
Values
[http://www.arizonavacationvalues.com/]
Arizona Office of Tourism - Login
[http://www.azot.com/]

TRADE OFFICE
Arizona Trade Office
[http://www.arizonainsonora.com/]

TRANSPORTATION (DEPARTMENT OF)
US 60 Study
[http://www.us60study.com/]
Red Mountain Freeway
[http://www.redmountainfreeway.com/]
]
Arizona Bicycle and Pedestrian
Program [http://www.azbikeped.org/]
ServiceArizona - Online Vehicle
Registration and Other Motor Vehicle
Department Services
[http://www.servicearizona.ihost.com/]
Arizona Department of Transportation
[http://www.dot.state.az.us/]
SR51 ~ Index [http://www.sr51.com/]

MoveAZ - Arizona Long Range
Transportation Plan
[http://www.moveaz.org/]
ServiceArizona - Online Vehicle
Registration and Other Motor Vehicle
Department Services
[http://www.servicearizona.com/]
Quiet Roads ~ Index ~ History
[http://www.quietroads.com/]
Scenic179.com
[http://www.scenic179.com/]
Welcome! I-10 Corridor Study Home
[http://www.i10corridor.com/]
Arizona Department of Transportation
[http://dot.state.az.us/]
Red Mountain Freeway
[http://redmountainfreeway.com/]
ServiceArizona - Online Vehicle
Registration and Other Motor Vehicle
Department Services
[http://servicearizona.com/]
Home
[http://www.wickenburg.civilnet.sverdrup.com/]
ServiceArizona - Online Vehicle
Registration and Other Motor Vehicle
Department Services
[http://servicearizona.ihost.com/]
Arizona Highways
[http://www.shoparizonahighways.com/]
ADOT - I 17
[http://www.i17wideningstudy.com/]
US 60 Superstition Freeway
[http://www.superstitionfreeway.com/]

TRANSPORTATION PLANNING DIVISION
ADOT Transportation Planning
Division [<http://tpd.az.gov/>]

TREASURER, OFFICE OF STATE
AZ Treasury Home Page
[<http://www.aztreasury.state.az.us/>]

UNIVERSITY OF ARIZONA
The University of Arizona
[www.arizona.edu/]

VETERAN'S SERVICE COMMISSION
Arizona Department of Veterans'
Services [<http://www.azvets.com/>]

VETERINARIAN (STATE)
Welcome to the Office of the State
Veterinarian
[http://agriculture.state.az.us/ASD/state_vet.htm]

Veterinary Medical Examiners Board
Arizona State Veterinary Medical
Examining Board - Home
[<http://www.vetbd.state.az.us/>]

VITAL RECORDS
Vital Records
[<http://genealogy.az.gov>]

WATER BANKING AUTHORITY, ARIZONA
AWBA Home
[<http://www.awba.state.az.us/>]

WATER INFRASTRUCTURE FINANCE
AUTHORITY
Water Infrastructure Finance
Authority
[<http://www.wifa.state.az.us/main.html>
]

WATER PROTECTION FUND, ARIZONA
Water Protection Fund, Arizona
[<http://www.awpf.state.az.us/>]

WATER RESOURCES
Arizona Department of Water
Resources [<http://www.water.az.gov/>]

WEIGHTS & MEASURES, DEPT OF
Department of Weights and
Measures
[<http://www.weights.az.gov/>]

APPENDIX 2 : DISTINCT ARIZONA DOMAINS

23 July 2004

A spider collecting all links from seven large sites captured some 10,000 links, including some 1,400 distinct domains. Some 200 domains are devoted to state agency publications. The list of state domains was checked to identify domains that are redirected to the canonical domain. Non-canonical domains are marked with an asterisk.

159.87.132.28/ *	www.acjc.state.az.us/
216.198.194.4/ *	www.acpe.asu.edu/
aci.az.gov/	www.adc.state.az.us/
acpe.epsilonium.com/	www.adcrc.com/
ag.arizona.edu/extension/	www.ade.az.gov/ *
agriculture.state.az.us/ *	www.ade.state.az.us/
ahs.dreamteamtech.com/ *	www.adeq.state.az.us/
alistrack.azleg.state.az.us/	www.admmr.state.az.us/
az.gov/ *	www.adoa.state.az.us/
azcapitol.lib.az.us/	www.agriculture.state.az.us/
azdirect.state.az.us/	www.ahcccs.state.az.us/
azgita.gov/ *	www.ahs.state.az.us/
azmextrade.com/	www.apaac.state.az.us/
azppse.state.az.us/	www.apltwo.ct.state.az.us
azredistricting.org/	www.appraisal.state.az.us/
capitolrideshare.com/ *	www.arizonaarts.org/
cip.lib.az.us/	www.arizonadc.com/
collegesavings.azhighered.org/	www.arizonaeducationjobs.com/
crime.azvictims.com/ *	www.arizonaguide.com/
crime.azvictims.org/	www.arizonahighways.com/
dot.state.az.us/ *	www.arizonahistoricalociety.org/ *
ebook.state.az.us/	www.arizonainsonora.com/
genealogy.az.gov	www.arizonalottery.com/
gita.state.az.us/ *	www.arizonascenicroads.com
hava.sos.state.az.us/	www.arizonasenate.org/
photos.lib.az.us/	www.arizonavacationvalues.com/
pressroom.arizonaguide.com/	www.arizonaworkforceconnection.com/
redmountainfreeway.com/	www.arra.state.az.us/
secure.az.gov/ *	www.asbcs.state.az.us/
servicearizona.com/	www.asbo.state.az.us/
servicearizona.ihost.com/ *	www.asdb.state.az.us/
sporas.ad.state.az.us/ *	www.asmi.state.az.us/
stayinschool.azhighered.org/	www.asrs.state.az.us/
tpd.az.gov/	www.attorney_general.state.az.us/ *
www.211.az.gov/	www.attorneygeneral.state.az.us/
www.aata.state.az.us/	www.auditorgen.state.az.us/
www.abor.asu.edu/	www.awba.state.az.us/
www.accountancy.state.az.us/	www.awpf.state.az.us/
www.achi.state.az.us/	www.az.gov/

www.az211.gov/ *
www.az511.com/
www.azbanking.com/
www.azbikeped.org/
www.azcfrfrc.az.gov/
www.azchiroboard.com/
www.azcommerce.com/ *
www.azdentalboard.org/
www.azgfd.com/ *
www.azgohs.state.az.us/
www.azgs.state.az.us/
www.azgu.gov/
www.azhighered.org/
www.azhistorytraveler.org/
www.azhousetv.org/
www.azhumanities.org/
www.azleg.state.az.us/
www.azll.com/
www.azoah.com/
www.azosteoboard.org/
www.azot.com/
www.azpost.state.az.us/
www.azrisk.state.az.us/
www.azruco.com/
www.azserc.org/
www.azsexoffender.com/
www.azspo.az.gov/
www.azstatefair.com/
www.azstreambeds.com/
www.aztaxes.gov/
www.aztreasury.state.az.us/
www.azvets.com/
www.azvictims.com/ *
www.azvictims.org/
www.bbhe.state.az.us/
www.bomex.org/
www.btr.state.az.us/
www.capitolridesshare.com/
www.cc.state.az.us/
www.ccec.state.az.us/
www.ccsd.cc.state.az.us/
www.cofad1.state.az.us
www.comisionsonora-arizona.gob.mx/
www.commerce.state.az.us/
www.cosmetology.state.az.us/
www.dbfs.state.az.us/
www.de.state.az.us/
www.dem.state.az.us/
www.dlapr.lib.az.us/ *

www.dolanellis.com/
www.dot.state.az.us/
www.dps.state.az.us/
www.funeralbd.state.az.us/
www.gcit.az.gov/
www.gf.state.az.us/
www.gita.state.az.us/
www.gm.state.az.us/
www.governor.state.az.us/
www.grrc.state.az.us/
www.homelandsecurity.az.gov/
www.housingaz.com/
www.hr.state.az.us/
www.hs.state.az.us/
www.i10corridor.com/
www.i17wideningstudy.com/
www.ica.state.az.us/
www.id.state.az.us/
www.indianaffairs.state.az.us/
www.juvenile.state.az.us/
www.kidscare.state.az.us/
www.know-the-ada.com/
www.land.state.az.us/
www.lib.az.us/
www.marshalltrimble.com/
www.massage.state.az.us/
www.medicine.arizona.edu/
www.mindspring.com/
www.missingmoney.com/
www.moveaz.org/
www.nciabd.state.az.us/
www.npbomex.az.gov/
www.ospb.state.az.us/
www.personnel.state.az.us/
www.pharmacy.state.az.us/
www.phoenixvis.net/
www.pioneers.state.az.us/
www.podiatry.state.az.us/
www.powerauthority.org/
www.pr.state.az.us/
www.problemgambling.az.gov/
www.psprs.com/
www.psychboard.az.gov/
www.ptboard.state.az.us/
www.quietroads.com/
www.raccom.state.az.us/
www.rb.state.az.us/
www.rc.state.az.us/
www.re.state.az.us/

www.redmountainfreeway.com/ *
www.revenue.state.az.us/
www.sb.state.az.us/
www.sboe.state.az.us/
www.scenic179.com/
www.scfaz.com/
www.servicearizona.com/ *
www.servicearizona.ihost.com/ *
www.sfb.state.az.us/
www.sharlot.org/
www.shoparizonahighways.com/
www.sos.state.az.us/
www.sosaz.com/ *
www.spirit.az.gov/
www.sr51.com/

www.state.az.us/ *
www.statemuseum.arizona.edu/
www.superstitionfreeway.com/
www.supreme.state.az.us/
www.taxamnesty.az.gov/
www.tepp.org/
www.us60study.com/
www.users.qwest.net/
www.vetbd.state.az.us/
www.water.az.gov/
www.weights.az.gov/
www.wickenburg.civilnet.sverdrup.com/
www.wifa.state.az.us/
www.workforce.az.gov/
www3.ade.az.gov/ *

Appendix 3: Arizona Department of Water Resources Directory Structure

Directory names in roman are taken from a list created by an analysis of the website. Supplied names and numbers for the series and subseries are in bold. Directories used for internal organization, rather than content, are marked with an asterisk; although these directories may contain content, that content is accessed through links in other directories.

§1 - Agency Publications

- adwr/*
- adwr/_derived/*
- adwr/_themes/adwr/*
- adwr/Content/*
- adwr/Content/_themes/adwr/*

§§1.1 ADWR Network

- adwr/Content/ADWRNetwork/

§§1.2 ADWR Site Map

- adwr/Content/Browse/
- adwr/Content/Browse/_derived/*

§§1.3 Conservation

- adwr/Content/Conservation/
- adwr/Content/Conservation/_derived/*
- adwr/Content/Conservation/files/
- adwr/Content/Conservation/GreyWater/
- adwr/Content/Conservation/LowWaterPlantLists/
- adwr/Content/Conservation/LowWaterPlantLists/PhoenixAMA/Files/
- adwr/Content/Conservation/LowWaterPlantLists/PinalAMA/
- adwr/Content/Conservation/LowWaterPlantLists/PrescottAMA/Files/
- adwr/Content/Conservation/LowWaterPlantLists/SantaCruzAMA/files/
- adwr/Content/Conservation/LowWaterPlantLists/TucsonAMA/Files/
- adwr/Content/Conservation/WaterUseItWisely/
- adwr/Content/Conservation/Xeriscape/
- adwr/Content/Conservation/Xeriscape/Forms/
- adwr/Content/Conservation/Xeriscape/winners/2003/

§§1.4 Contact Information

- adwr/Content/ContactUs/
- adwr/Content/ContactUs/_derived/
- adwr/Content/ContactUs/DeptOrganization/
- adwr/Content/ContactUs/Email/
- adwr/content/ContactUs/More/

§§1.5 Privacy Policy and Website Disclaimer

- adwr/Content/Disclaimer/

§§1.6 Well Driller List

adwr/Content/Drillers/

§§1.7 Employment (Open Position Announcements)

adwr/Content/Employment/
adwr/Content/Employment/_derived/

§§1.8 Frequently Asked Questions

adwr/Content/FAQ/
adwr/Content/FAQ/_derived/

§§1.9 Forms

adwr/Content/forms/
adwr/Content/Forms/_derived/
adwr/Content/Forms/Files/
adwr/Content/Forms/Files/AnnualReports/
adwr/Content/Forms/Files/AnnualReports/archives/2002/
adwr/Content/Forms/Files/AssuredWaterSupply/
adwr/Content/Forms/Files/GroundwaterRights/
adwr/Content/Forms/Files/GroundwaterWithdrawalPermits/
adwr/Content/Forms/files/maps/
adwr/Content/Forms/Files/StatementOfClaimant/adjudication/
adwr/Content/Forms/Files/StatementOfClaimant/adjudication/AguaFria/
adwr/Content/Forms/Files/StatementOfClaimant/adjudication/LCR/
adwr/Content/Forms/Files/StatementOfClaimant/adjudication/LowerGila/
adwr/Content/Forms/Files/StatementOfClaimant/adjudication/maps/
adwr/Content/Forms/Files/StatementOfClaimant/adjudication/SanPedro/
adwr/Content/Forms/Files/StatementOfClaimant/adjudication/UpperGila/
adwr/Content/Forms/Files/StatementOfClaimant/adjudication/UpperSalt/
adwr/Content/Forms/Files/StatementOfClaimant/adjudication/UpperSantaCruz/
adwr/Content/Forms/Files/StatementOfClaimant/adjudication/verde/
adwr/Content/Forms/Files/StatementOfClaimant/Amendments/
adwr/Content/Forms/Files/WaterRights/
adwr/Content/Forms/Files/WellPermitting_NOI/

§§1.10 Imaged Records

Note: Includes 1. Well Registry (Files that begin with the prefix '55') – 2. Statement of Claimant / Adjudication Files (Files that begin with the prefix '39') – 3. Surface Water Files (Files that begin with the prefixes '33', '36', '38', '3r', '45', '46', '4a', 'bb') – 4. Groundwater Authority Files (Files that begin with the prefixes '56', '57', '58', '59', '60', '61', '62', '70', '71', '73')

adwr/Content/ImagedRecords/
adwr/Content/ImagedRecords/Help/PWFiles/

§§1.11 Information about Imaged Records and Agency Bookstore

adwr/Content/InfoCentral/
adwr/Content/InfoCentral/_derived/

§§1.12 Lecture Series Announcements

adwr/Content/LectureSeries/

§§1.13 Links to other websites

adwr/Content/Links/

adwr/Content/Links/_derived/

§§1.14 News and Announcements

adwr/Content/News/

adwr/Content/News/_derived/

§§1.15 Publications

Note: Includes 1. New publications – 2. Adjudications – 3. Publications and reports – 4. Conservation related information – 5. Floodplain management in Arizona – 6. Dam safety – 7. Viewer Downloads.

adwr/Content/Publications/

adwr/Content/Publications/_derived/

adwr/Content/Publications/_themes/adwr/

adwr/Content/Publications/files/

adwr/Content/Publications/files/CRM/

adwr/Content/Publications/files/news/

adwr/Content/Publications/files/ThirdMgmtPlan/Modified/

adwr/Content/Publications/files/ThirdMgmtPlan/Modified/phoenix/

adwr/Content/Publications/files/ThirdMgmtPlan/Modified/pinal/

adwr/Content/Publications/files/ThirdMgmtPlan/Modified/prescott/

adwr/Content/Publications/files/ThirdMgmtPlan/Modified/santa_cruz/

adwr/Content/Publications/files/ThirdMgmtPlan/Modified/tucson/

adwr/Content/Publications/files/ThirdMgmtPlan/tmp_final/

adwr/Content/Publications/files/ThirdMgmtPlan/tmp_final/phoenix/

adwr/Content/Publications/files/ThirdMgmtPlan/tmp_final/pinal/

adwr/Content/Publications/files/ThirdMgmtPlan/tmp_final/prescott/

adwr/Content/Publications/files/ThirdMgmtPlan/tmp_final/santa_cruz/

adwr/Content/Publications/files/ThirdMgmtPlan/tmp_final/tucson/

adwr/Content/Publications/style/

adwr/Content/PublicNotice/

adwr/Content/style/*

Arizona Water Information / Statutes and Rules Includes 1. Legal research and reference materials – 2. Supply and demand – 3. State Groundwater Management – 4. Surface water management in Arizona – 4. Assessments, etc. – 5. Viewer downloads.

adwr/Content/WaterInfo/
adwr/Content/WaterInfo/_derived/
adwr/Content/WaterInfo/InsideAMAs/
adwr/Content/WaterInfo/OutsideAMAs/
adwr/Content/WaterInfo/OutsideAMAs/CentralHighlands/
adwr/Content/WaterInfo/OutsideAMAs/CentralHighlands/Basins/
adwr/Content/WaterInfo/OutsideAMAs/CentralHighlands/Basins/images/
adwr/Content/WaterInfo/OutsideAMAs/CentralHighlands/Watersheds/
adwr/Content/WaterInfo/OutsideAMAs/CentralHighlands/Watersheds/images/
adwr/Content/WaterInfo/OutsideAMAs/LowerColorado/
adwr/Content/WaterInfo/OutsideAMAs/LowerColorado/Basins/
adwr/Content/WaterInfo/OutsideAMAs/LowerColorado/Basins/images/
adwr/Content/WaterInfo/OutsideAMAs/LowerColorado/Watersheds/
adwr/Content/WaterInfo/OutsideAMAs/PlateauPlanning/
adwr/Content/WaterInfo/OutsideAMAs/PlateauPlanning/Basins/
adwr/Content/WaterInfo/OutsideAMAs/PlateauPlanning/images/
adwr/Content/WaterInfo/OutsideAMAs/PlateauPlanning/Watersheds/
adwr/Content/WaterInfo/OutsideAMAs/SoutheasternArizona/
adwr/Content/WaterInfo/OutsideAMAs/SoutheasternArizona/Basins/
adwr/Content/WaterInfo/OutsideAMAs/SoutheasternArizona/Basins/images/
adwr/Content/WaterInfo/OutsideAMAs/SoutheasternArizona/images/
adwr/Content/WaterInfo/OutsideAMAs/SoutheasternArizona/Watersheds/
adwr/Content/WaterInfo/OutsideAMAs/UpperColorado/
adwr/Content/WaterInfo/OutsideAMAs/UpperColorado/Basins/
adwr/Content/WaterInfo/OutsideAMAs/UpperColorado/images/

adwr/ITDDatabase_interface/FAQ1/editor/*
adwr/Library/CSS/*
adwr/Library/images/*
adwr/Library/images/video/*
adwr/Library/Includes/*
adwr/Library/Includes/LinkDisclaimer.asp*
ECscripts/ECware.exe/*

§§1.16 Online Filing Center for Notices of Intention to Drill Wells

noi/

PublicNotice_interface/PublicNotice/editor/*

§2 - Field Services

FieldServices/
FieldServices/content/
FieldServices/content/Equipment/
fieldservices/content/search/scripts/

§3 - Governor's Drought Task Force

gdtf/
gdtf/content/calendar/
gdtf/content/ClimateInfo/
gdtf/content/Conservation/
gdtf/content/links/
gdtf/content/LongTerm/
gdtf/content/meetings/
gdtf/content/NewsBlurbs/
gdtf/content/ShortTerm/
gdtf/content/WhatsNew/

gwmc/images/*
images/*
news/pressfiles/2002/*

§4 - Recharge Section

recharge/

style/*

§5 - Water Management

watermanagement/
WaterManagement/Content/AMAs/
WaterManagement/Content/AMAs/PhoenixAMA/
WaterManagement/Content/AMAs/PinalAMA/
WaterManagement/Content/AMAs/PrescottAMA/
WaterManagement/Content/AMAs/SantaCruzAMA/
WaterManagement/Content/AMAs/TucsonAMA/
watermanagement/Content/Conservation/
WaterManagement/Content/InformationManagement/
watermanagement/Content/OAAWS/
watermanagement/Content/WaterRights/

§6 - Rural Arizona Watershed Alliance

watershed/
watershed/content/calendar/
watershed/content/contact/
watershed/content/faq/
watershed/content/grants/
watershed/content/links/
watershed/content/map/
watershed/content/news/

§7 - Water Quality Assurance Revolving Fund

wqarf/
wqarf/content/contact_us/
wqarf/content/definitions/
wqarf/content/Publications/
wqarf/content/Statutes/
wqarf/content/WQARFInfo/

Appendix 4: Arizona Department of Water Resources Finding Aid

The series outline and series content are the bulk of most finding aids. Not included here are the administrative information about acquisition, processing, and restrictions, or the agency history and scope note. Finding aids often include scope notes for each series, either as part of the series outline or at the beginning of of each series in the series content.

SERIES OUTLINE

- 1 Agency Publications
 - 1.1 ADWR Network
 - 1.2 ADWR Site Map
 - 1.3 Conservation
 - 1.4 Contact Information
 - 1.5 Privacy Policy and Website Disclaimer
 - 1.6 Well Driller List
 - 1.7 Employment (Open Position Announcements)
 - 1.8 Frequently Asked Questions
 - 1.9 Forms
 - 1.10 Imaged Records
 - 1.11 Information about Imaged Records and Agency Bookstore
 - 1.12 Lecture Series
 - 1.13 Links to Other Websites
 - 1.14 News and Announcements
 - 1.15 Publications
 - 1.16 Online Filing Center for Notices of Intention to Drill Wells
- 2 Field Services
- 3 Governor's Drought Task Force
- 4 Recharge Section
- 5 Water Management
- 6 Rural Watershed Alliance
- 7 Water Quality Assurance Revolving Fund

SERIES CONTENTS

Item	Title (Filename)	Last Modified	Size
§1	ADWR : General Works		
§1.1	ADWR Network		
1	ADWR Network	29-Mar-04 22:05:44	22586
§1.2	ADWR Site Map <i>This series not saved in the Web archives.</i>		
§1.3	Conservation		
1	Conservation	29-Mar-04 22:05:44	26574
2	ArizonaWET	12-Jun-03 19:52:00	105762
3	developers-brochure	09-Jun-03 16:37:16	100921
4	dripirigguide	08-Oct-03 22:48:54	1409268
5	FrontLoadingWasherStudyTucson	09-Jun-03 17:20:42	136364
6	grass	09-Jun-03 16:35:22	7985
7	METROREP	09-Jun-03 17:31:20	36935
8	WETWesternGold	12-Jun-03 19:51:58	61973
9	grayv3 1	21-Mar-03 17:16:12	336600
10	Low Water Use Plant Lists	29-Mar-04 22:05:44	27692
11	DesertGuidePHX	09-Jan-03 20:08:48	206634
12	DesertGuidePHXBiblio	20-Dec-01 16:50:04	144864
13	DesertGuidePHXSupplemental	21-Jun-00 22:46:06	148931
14	DGPHXLowWaterMod	16-Jul-01 19:51:46	25113
15	low water use plant list	14-Jul-03 16:07:08	409325
16	DesertGuidePRE	10-Sep-02 15:58:52	680618
17	DesertGuideSCZ	10-Sep-02 15:47:24	220840
18	DesertGuideTUC	10-Sep-02 16:00:46	190708
19	updated Tucson Plant List Application Form	15-Mar-04 17:27:23	72434
20	Water Use it Wisely	29-Mar-04 22:05:44	34998
21	Tucson AMA Xeriscape Contest	29-Mar-04 22:05:44	32036
22	Xeriscape	29-Mar-04 22:05:44	19499
23	Tucson AMA Xeriscape Contest	29-Mar-04 22:05:56	23353
24	Winners2003	30-May-03 20:49:58	484619
25	Xero for web	15-Oct-03 17:21:28	637159
26	2004 homeowner brochure border	26-Feb-04 16:13:38	1061984
27	2004 Homeowner Entry Judges Form	02-Mar-04 17:30:14	77555
28	2004 Professional Entry Form	26-Feb-04 16:13:35	654361
29	2004 Professional Entry Judges Form	02-Mar-04 17:30:20	77894
30	2004 Xeriscape Contest Criteria	26-Feb-04 16:14:13	64998
31	2004 Xeriscape leader nomination form	26-Feb-04 16:13:34	135956
32	homeowner worksheet	29-Jan-04 16:39:24	7462
33	HOWTOREA	20-Feb-03 19:03:16	33899
34	Volume Based Audit Worksheet	26-Feb-04 16:13:38	65150
35	Volume Water Audit instructions	26-Feb-04 16:13:38	4406
36	2003 CommunityXeriscapeLeaderForWeb	27-Jun-03 14:53:48	52181
37	2003XeriscapeAwardsForWeb	26-Jun-03 17:48:24	208007
§1.4	Contact Information <i>This series not saved in the Web archives.</i>		
§1.5	Privacy Policy and Website Disclaimer <i>This series not saved in the Web archives.</i>		
§1.6	Well Driller List		
1	Driller List Search	29-Mar-04 22:40:28	19147
2	License Number	29-Mar-04 22:45:57	44160
§1.7	Employment (Open Position Announcements)		

	<i>This series not saved in the Web archives.</i>		
§1.8	Frequently Asked Questions		
1	FAQ	29-Mar-04 22:40:26	30224
§1.9	Forms <i>This series not saved in the Web archives.</i>		
§1.10	Imaged Records		
1	Imaged Records	29-Mar-04 22:05:46	22283
§1.11	Information about Imaged Records and Agency Bookstore <i>This series not saved in the Web archives.</i>		
§1.12	Lecture Series		
1	BBTomGalbraith	15-Mar-04 19:38:25	20480
§1.13	Links to Other Websites <i>This series not saved in the Web archives.</i>		
§1.14	News and Announcements		
1	News	29-Mar-04 22:05:47	47830
2	h2088	08-May-03 20:56:22	39255
3	IIDQSA100303	03-Oct-03 22:14:52	50184
§1.15	Publications		
1	Publications	29-Mar-04 22:05:47	40754
2	TITLE 12	26-Feb-03 20:25:30	1076150
3	2001PrescottMonReportOPT	09-Oct-02 19:01:38	743639
4	2002nrscSoilSurveyCochise	19-Sep-03 16:26:06	4255859
5	2002Xawards	23-Jan-04 18:26:48	220057
6	2003 report final	10-Sep-03 19:38:50	2761376
7	AACTitle12Chap150801	09-Oct-02 19:12:56	1021040
8	ApplicationChecklistwithrules0401	09-Oct-02 19:12:34	91913
9	ApplicationForm0301	09-Oct-02 19:12:32	32903
10	ARS45CH6Statuteswindex070199	09-Oct-02 19:12:56	49662
11	AZ county emrgncy mngmnt coords-revised 3-Jul-03	01-Dec-03 16:02:56	299900
12	AZDamSafetyProgram0401	09-Oct-02 19:12:32	14865
13	AZEAP 10-24-03	12-Dec-03 20:48:26	287744
14	AZEAP 10-24-03	01-Dec-03 16:02:56	253065
15	BiblioPubs	23-Jan-04 18:28:40	164874
16	colorivmgt	23-Jan-04 18:26:00	230139
17	conservreqts	23-Jan-04 18:29:40	172937
18	DamSafetyFactSheet0801	09-Oct-02 19:12:56	39520
19	EAP Requirement Checklist	31-Jul-03 17:27:46	21929
20	exh1	09-Oct-02 18:11:56	150642
21	exh2	09-Oct-02 18:12:16	119680
22	exh3	09-Oct-02 18:12:26	96381
23	FEMA640801	09-Oct-02 19:12:52	3156097
24	FinalReport	09-Oct-02 18:58:04	5689344
25	FinalReport	09-Oct-02 18:57:20	2425365
26	finrepweb	09-Oct-02 18:20:54	11449344
27	gwmgtoww	16-Jul-03 23:41:20	186191
28	Indrts	04-Oct-02 18:44:38	803227
29	InstructionsforFilinganApplication0401	09-Oct-02 19:12:32	33106
30	List0802	09-Oct-02 19:06:46	6763
31	PMF hydrology and routing guidelines	11-Mar-04 23:14:05	42722
32	Prescott rita	09-Oct-02 18:39:42	75052
33	RequirementsDuringandFollowingConstruction0401	09-Oct-02 19:12:52	171171
34	SS197tdnwp10801	09-Oct-02 19:06:20	127361
35	SS2960801	09-Oct-02 19:07:02	3023933
36	SS394Supercrit0801	09-Oct-02 19:06:20	3809393
37	SS495Shiflow0801	09-Oct-02 19:07:44	1649284
38	SS596SysSedBal0801	09-Oct-02 19:06:46	3846340

39	SS696IndividualResidentialLots0801	09-Oct-02 19:06:22	309447
40	SS798bankstbl20801	09-Oct-02 19:07:24	2967453
41	SS899DetentionRetention0801	09-Oct-02 19:07:32	1348765
42	ss9-02FloodplainModeling1	09-Oct-02 19:06:12	1559131
43	strawborehole	09-Oct-02 19:04:06	9775222
44	subflow technical report San pedro watershed A 032902	09-Oct-02 19:00:10	3343876
45	SUPPLYDEMAND	31-Oct-03 21:57:12	89730
46	SurplusGuidelines	09-Oct-02 18:10:14	1337573
47	WelConEst	09-Oct-02 19:02:24	73795
48	well owners guide	15-Apr-03 17:14:16	94367
49	wellguide	23-Jan-04 18:22:04	192813
50	wgarf	23-Jan-04 18:23:04	158296
51	YumaDesalinizationPlant	21-Apr-03 21:14:36	6919903
52	YumaDesalinizationPlantAppens	21-Apr-03 21:14:28	3966038
53	2002PrescottMonitoringReport	10-Oct-02 16:50:38	1508554
54	adwrtransition2002	09-Jan-03 18:55:28	1619276
55	borderwaterconservationday031802	10-Oct-02 16:56:06	20485
56	finalcoverletter	10-Oct-02 16:56:12	124193
57	irrigationdraft	10-Oct-02 16:56:12	861806
58	kylgric092402	10-Oct-02 16:48:16	38709
59	ModellIrrigEfficiencyordinanceExecsummary	22-May-03 17:27:42	80535
60	New Area Director 053102	10-Oct-02 16:52:02	71597
61	Ordinancedraft	10-Oct-02 16:56:06	144207
62	PinalAMAMovingtoNewOffices031902	10-Oct-02 16:56:12	17605
63	PresModRepTwelve091602	10-Oct-02 16:48:44	4375595
64	Xeriscapes3	10-Oct-02 16:47:54	626169
65	Third Management Plan Modifications	29-Mar-04 22:05:47	27462
66	Chapter4-PhoenixAg	14-Jul-03 21:32:54	254464
67	Chapter5-PhoenixMunicipal	14-Jul-03 21:32:50	118272
68	Chapter6-PhoenixIndustrial	14-Jul-03 21:32:54	29184
69	Chapter9-PhoenixWaterMgmtAssistance	14-Jul-03 21:32:50	45568
70	PhoenixAMA-TMP ModificationIntroduction	14-Jul-03 21:32:52	290512
71	PhoenixTMP ModCoverFinal	14-Jul-03 21:32:54	21504
72	Chapter4-PinalAg	14-Jul-03 22:28:38	238080
73	Chapter5-PinalMunicipal	14-Jul-03 22:28:36	103936
74	Chapter6-PinalIndustrial	14-Jul-03 22:28:36	28160
75	Chapter9-PinalWaterMgmtAssistance	14-Jul-03 22:28:36	38912
76	PinalAMA-TMP ModificationIntroduction	14-Jul-03 22:28:36	279253
77	PinalTMP ModCoverFinal	14-Jul-03 22:28:34	22016
78	Chapter4-PrescottAg	15-Jul-03 15:05:08	219648
79	Chapter5-PrescottMunicipal	15-Jul-03 15:05:14	107520
80	Chapter6-PrescottIndustrial	15-Jul-03 15:05:24	29184
81	Chapter9-PrescottWaterMgmtAssistance	15-Jul-03 15:05:36	54784
82	PrescottAMA-TMP ModificationIntroduction	15-Jul-03 15:05:46	284858
83	PrescottTMP ModCoverFinal	15-Jul-03 15:05:56	22016
84	Chapter4-SantaCruzAg	15-Jul-03 16:21:40	220672
85	Chapter5-SantaCruzMunicipal	15-Jul-03 16:21:40	106496
86	Chapter6-SantaCruzIndustrial	15-Jul-03 16:21:38	28672
87	Chapter9-SantaCruzWaterMgmtAssistance	15-Jul-03 16:21:38	55296
88	SantaCruzAMA-TMP ModificationIntroduction	15-Jul-03 16:21:42	263981
89	SantaCruzTMP ModCoverFinal	15-Jul-03 16:21:40	22016
90	Chapter4-TucsonAg	15-Jul-03 16:56:08	227840
91	Chapter5-TucsonMunicipal	15-Jul-03 16:56:08	223744
92	Chapter6-TucsonIndustrial	15-Jul-03 16:56:10	84480
93	Chapter9-TucsonWaterMgmtAssistance	15-Jul-03 16:56:08	61952
94	TucsonAMA-TMP ModificationIntroduction	15-Jul-03 16:56:10	346654

95	<u>TucsonTMP ModCoverFinal</u>	15-Jul-03 16:56:10	22016
96	<u>ADWR Third Management Plan 2000-2010</u>	29-Mar-04 22:05:47	40691
97	<u>ch10-phx</u>	09-Oct-02 23:26:34	907906
98	<u>ch11-phx</u>	09-Oct-02 23:56:20	3374037
99	<u>ch12-phx</u>	09-Oct-02 23:40:16	1424844
100	<u>ch1-phx</u>	09-Oct-02 23:36:54	1742009
101	<u>ch2-phx</u>	09-Oct-02 23:51:32	4709627
102	<u>ch3-phx</u>	09-Oct-02 23:24:40	3071738
103	<u>ch4-phx</u>	09-Oct-02 23:26:24	4028586
104	<u>ch5-phx</u>	09-Oct-02 23:30:54	13688462
105	<u>ch6-phx</u>	09-Oct-02 23:36:40	13557224
106	<u>ch7-phx</u>	09-Oct-02 23:47:32	6236250
107	<u>ch8-phx</u>	09-Oct-02 23:55:52	7435826
108	<u>ch9-phx</u>	09-Oct-02 23:59:26	3213386
109	<u>phx-toc</u>	09-Oct-02 23:40:08	2340276
110	<u>ch10-pinal</u>	09-Oct-02 23:29:04	911110
111	<u>ch11-pinal</u>	09-Oct-02 23:32:58	1403915
112	<u>ch12-pinal</u>	09-Oct-02 23:58:50	1201980
113	<u>ch1-pinal</u>	09-Oct-02 23:32:16	1939043
114	<u>ch2-pinal</u>	09-Oct-02 23:39:52	2120884
115	<u>ch3-pinal</u>	09-Oct-02 23:45:02	4928652
116	<u>ch4-pinal</u>	09-Oct-02 23:46:54	2603827
117	<u>ch5-pinal</u>	09-Oct-02 23:44:30	11380804
118	<u>ch6-pinal</u>	09-Oct-02 23:50:58	9601610
119	<u>ch7-pinal</u>	09-Oct-02 23:39:40	5086645
120	<u>ch8-pinal</u>	09-Oct-02 23:42:38	5019434
121	<u>ch9-pinal</u>	09-Oct-02 23:46:36	1312677
122	<u>pin-toc</u>	09-Oct-02 23:28:58	1903995
123	<u>ch10-pre</u>	09-Oct-02 23:25:50	892108
124	<u>ch11-pre</u>	09-Oct-02 23:42:00	1696626
125	<u>ch12-pre</u>	09-Oct-02 23:46:26	1342767
126	<u>ch1-pre</u>	09-Oct-02 23:26:46	1866121
127	<u>ch2-pre</u>	09-Oct-02 23:25:38	3180637
128	<u>ch3-pre</u>	09-Oct-02 23:24:16	3658798
129	<u>ch4-pre</u>	09-Oct-02 23:43:02	2887354
130	<u>ch5-pre</u>	09-Oct-02 23:28:48	11348856
131	<u>ch6-pre</u>	09-Oct-02 23:54:14	5839160
132	<u>ch7-pre</u>	09-Oct-02 23:32:46	4403322
133	<u>ch8-pre</u>	09-Oct-02 23:25:18	4485086
134	<u>ch9-pre</u>	09-Oct-02 23:46:16	1132789
135	<u>pre-toc</u>	09-Oct-02 23:31:50	1944603
136	<u>ch10-sc</u>	09-Oct-02 23:39:06	1206917
137	<u>ch11-sc</u>	09-Oct-02 23:38:58	1867421
138	<u>ch12-sc</u>	09-Oct-02 23:34:46	1747100
139	<u>ch1-sc</u>	09-Oct-02 23:34:56	2189275
140	<u>ch2-sc</u>	09-Oct-02 23:38:42	3924801
141	<u>ch3-sc</u>	09-Oct-02 23:41:48	2559195
142	<u>ch4-sc</u>	09-Oct-02 23:46:10	2836138
143	<u>ch5-sc</u>	09-Oct-02 23:53:28	12304637
144	<u>ch6-sc</u>	09-Oct-02 23:58:42	5714943
145	<u>ch7-sc</u>	09-Oct-02 23:41:28	3717379
146	<u>ch8-sc</u>	09-Oct-02 23:45:46	3409670
147	<u>ch9-sc</u>	09-Oct-02 23:49:46	1274183
148	<u>sc-toc</u>	09-Oct-02 23:29:24	2223686
149	<u>ch10-tuc</u>	09-Oct-02 23:49:36	909047
150	<u>ch11-tuc</u>	09-Oct-02 23:57:54	4980548

151	ch12-tuc	09-Oct-02 23:27:48	1358866
152	ch1-tuc	09-Oct-02 23:29:12	2087431
153	ch2-tuc	09-Oct-02 23:31:32	3564546
154	ch3-tuc	09-Oct-02 23:23:56	3227241
155	ch4-tuc	09-Oct-02 23:31:10	2726262
156	ch5-tuc	09-Oct-02 23:38:16	13372078
157	ch6-tuc	09-Oct-02 23:49:32	12915617
158	ch7-tuc	09-Oct-02 23:52:08	5848216
159	ch8-tuc	09-Oct-02 23:34:32	8121714
160	ch9-tuc	09-Oct-02 23:47:56	3340245
161	tuc-toc	09-Oct-02 23:32:04	2364256
§1.16	Online Filing Center for Notices of Intention to Drill Wells <i>This series not saved in the Web archives.</i>		
§2	Field Services		
1	Home	19-Feb-04 17:13:20	6555
2	Links	24-Feb-04 17:39:02	5603
3	Equipment Used	24-Feb-04 17:38:33	6240
§3	Governor's Drought Task Force		
1	GDTF (Governor's Drought Task Force) for the State of Arizona	29-Mar-04 22:45:01	37796
2	GDTF Calendar	06-Mar-04 21:11:00	24704
3	GDTF Climate Information	25-Feb-04 16:56:54	24918
4	GDTF State Wide Conservation Section	25-Feb-04 16:56:54	28943
5	GDTF Links	25-Feb-04 16:56:54	22078
6	GDTF Long Term Drought Plan Section	28-Mar-04 23:11:00	22607
7	GDTF Meetings	21-Mar-04 21:11:01	44273
8	GDTF News Blurbs	29-Mar-04 22:43:06	26179
9	GDTF Short Term Potable Section	25-Feb-04 16:56:54	27446
10	GDTF What's New	15-Mar-04 22:17:41	22694
§4	Recharge Section		
1	Basic Terminology	20-Feb-04 16:41:05	23792
2	Contacts	20-Feb-04 16:41:05	16496
3	Credits / Accounting	20-Feb-04 16:41:05	19951
4	ADWR Recharge Home Page	20-Feb-04 16:41:05	15120
5	Full Disclaimer	20-Feb-04 16:41:05	16382
6	Governing Statutes	20-Feb-04 16:41:05	35322
7	Links	20-Feb-04 16:41:05	20992
8	Permit Applications	20-Mar-04 20:11:00	34289
9	Permitted Facilities	20-Feb-04 16:41:05	15080
10	Program Permits	20-Feb-04 16:41:05	23005
11	Recharge Program	20-Feb-04 16:41:05	16768
12	Substantive Policy Statement	20-Feb-04 16:41:06	15008
§5	Water Management		
1	Water Management Home	12-Jan-04 17:18:54	9639
2	Active Mgmt Areas	12-Jan-04 17:18:52	13404
3	Phoenix AMA	12-Jan-04 17:18:52	21644
4	Pinal AMA	12-Jan-04 17:18:52	24451
5	Prescott Active Management Area	29-Mar-04 17:28:49	34338
6	Santa Cruz AMA	12-Jan-04 17:18:54	24996
7	Tucson AMA	12-Jan-04 17:18:54	25991
8	Conservation	12-Jan-04 17:18:54	17954
9	Information Management	12-Jan-04 17:18:54	14717
10	Assured/Adequate Water	24-Feb-04 19:42:04	25431
11	Surface Water Rights	12-Jan-04 17:18:54	21894

aggregate

Any group of items. Aggregate is used to emphasize the group as a whole, rather than as a collection of individual things.

archives

Materials created or received by a person, family, or organization, public or private, in the conduct of their affairs and preserved because of the enduring value contained in the information they contain or as evidence of the functions and responsibilities of their creator, especially those materials maintained using the principles of provenance, original order, and collective control; permanent records.

'Archives' has a number of meanings in information technology, including backups and data stored offline. The information stored on backups is primarily intended for system recovery and contains all the documents on a system, whether of permanent or ephemeral value. Information in offline storage is typically non-current information that must be kept for a period of time, but not necessarily permanently. A true archives contains information that must be kept indefinitely; for example, the archives of the State of Arizona must be kept at least as long as Arizona is a state (and probably any subsequent polity would also want to keep those records).

class

A group of things sharing a common attribute, especially a category within a file plan or organizational scheme. Class may refer to the category or the material within the category.

collection

A group of materials related by some characteristic. In archives, the unifying characteristic is typically the provenance (creator) and the order reflects an organic process that results in the records' creation. Sometimes called a fonds.

directory

A node in a hierarchical file system that contains zero or more other nodes, usually files or other directories. A directory within a directory is sometimes called a subdirectory.

document

Information fixed in some media, especially a printed work of text (with or without illustrations) or its digital equivalent.

A 'four-corners' document has linear content that can be easily reproduced on a two-dimensional surface, such as paper; a hyper-document contains a non-linear structure that can be traversed in different orders.

See also publication, record.

domain

1. A group of computers whose hostnames share a common suffix. – 2. A *fully qualified domain name* is a specific computer with the domain. – 3. A top-level domain is the final portion of an Internet domain.

A fully-qualified domain name is frequently, but not always, associated with a single server. In some instances the FQDN represents a single virtual server, transparently balancing requests among several servers. Also, a single server may host several different web sites, each with a different FQDN; the server distinguishes the desired website based on the URL. The phrase 'unqualified domain' is used to describe the common suffix within a domain. For example, the unqualified domain lib.az.us includes the fully-qualified domains cip.lib.az.us, rpm.lib.az.us, and www.lib.az.us.

A canonical domain is the principal form under which a site is registered in the domain name system. The same server may be registered using non-canonical aliases that redirect to the canonical form. For example, a site with the canonical domain www.azgita.gov may also have aliases from the non-canonical form www.qita.az.us.

For example, the Arizona State Library and Archives uses lib.az.us for its domain. It operates several servers with distinct, fully-qualifier domain names within this domain, including cip.lib.az.us, rpm.lib.az.us, and www.lib.az.us. All are within the top-level domain .us; other top-level domains include .gov, .com, and .org.

entity

Any division within an organization, including the organization as a whole. Common government entities include agencies, divisions, departments, offices, and programs. These terms do not consistently indicate entities within the hierarchy; for example, offices may sometimes be placed over departments.

A top-level entity is one with no parent. Top-level entities are organized under the appropriate branch of government (legislative, executive, or judicial). Subordinate entities have a parent; they may or may not have children. The Motor Vehicle Division is subordinate to the Department of Transportation, and the Office of Driver Services is subordinate to the Motor Vehicle Division.

harvester

Software that incorporates a spider to download pages from the web, and packages them for storage on another server.

host

A computer connected to a network. Host does not include routers, printers, or similar equipment.

provenance

The origin of something. In archives, the entity responsible for the creation of a collection. The documents within a collection may be created by individuals within and from outside the entity, but the provenance is responsible for the assembly and organization of the collection as a whole.

publication

A work that expresses some thought in language, signs, or symbols and that is reproduced for distribution.

Publications have been traditionally distinguished as a subset of documents that are produced in sufficient numbers to be made available to more than a few people. The cost of printing large numbers restricted the number of documents that were published. With the advent of the web, the cost of mass distribution of documents has plummeted, making it possible to publish on the web many things that would never have been published in paper. As a result, the boundary between a document and a publication has been blurred.

record

1. A written or printed work of a legal or official nature that may be used as evidence or proof; a document. – 2. Data or information that has been fixed on some medium; that has content, context, and structure; and that is used as an extension of human memory or to demonstrate accountability. – 3. Data or information in a fixed form that is created or received in the course of individual or institutional activity and set aside (preserved) as evidence of that activity for future reference. – 4. An instrument filed for public notice (constructive notice).

Records are generally considered to be a subset of document. Because three dimensional objects may serve as records, the concept of record includes more than text (with or without illustrations) on paper.

Records are generally considered to be unpublished because they are usually targeted for use principally by the parties to the record. However, many records may be filed with a public recorder (usually, the secretary of state or a county office) for public notice so that anyone may learn of the record. For example, deeds are filed to provide the general public knowledge of who owns what property.

record group

A collection of records that share the same provenance and are of a convenient size for their administration.

scope

Relevance to the collecting policy. Something in-scope should be collected. Something out of scope should not be collected.

series

In archives, a group of similar records that are arranged according to a filing system and that are related as the result of being created, received, or used in the same activity.

A series within a series may be called a subseries. For example, a series of purchase orders may be organized in separate subseries for each year.

Series are generally groups of aggregates, rather than items. For example, a series usually consists of folders, rather than individual documents.

An archival series is unrelated to the bibliographic notion of a serial. Because it represents a group of materials organized together, an archival series is much closer to the concept of a class within a collection.

server

A host computer used to store and provide access to data over a network.

'Server' may be used to describe the hardware itself, or to software that controls access to the data on the computer. For example, Apache is common software package to provide access to data, especially documents, over the web.

A server is usually represented by a fully qualified domain name. For example, rpm.lib.az.us

spider

Software that automatically downloads webpages, starting with a given seed URL and including all URLs referenced on that page. A spider may configured to follow URLs found on subsequent pages. In theory, a spider following every link on every page would find the majority of content on the web.

subseries

See series.

web presence

A neologism used to describe information that represents an entity on the web. A web presence may be a web site, a directory within a site, or even a single page. An agency's web presence is usually at the domain level (www.lib.az.us); a division's presence often at the directory level (www.lib.az.us/museum); and a program's presence at the page level (www.lib.az.us/museum/tours.html).

website

A set of related web documents and services published by an entity.

'Website' is a somewhat arbitrary term. In many cases, a website is hosted on a single server represented by a fully-qualified domain name; for example, all pages at www.lib.az.us. Large web sites may encompass many servers within a single domain that provide an integrated view of many documents; for example, a content on a specialized server (photos.lib.az.us) may be integrated with content on another server (www.lib.az.us). However, separate FQDN servers used for distinct purposes may be considered separate websites, even if the same entity is responsible for all the servers and even if the servers share the same unqualified domain.

A subordinate website is a collection of documents that form an intellectual whole, but which is part of a larger site. They may be more or less integrated with the parent site (structurally and aesthetically). Subordinate sites are often used for subordinate entities. For example, the Arizona Capitol Museum's website (www.lib.az.us/museum/) is subordinate to its parent institution's website (www.lib.az.us).

**Discussion Paper
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